

FUEL PROCESSOR AND METHOD FOR GENERATING HYDROGEN FOR FUEL CELLS

ABSTRACT OF THE DISCLOSURE

A method of producing a H₂ rich gas stream includes supplying an O₂ rich
5 gas, steam, and fuel to an inner reforming zone of a fuel processor that includes a partial
oxidation catalyst and a steam reforming catalyst or a combined partial oxidation and
stream reforming catalyst. The method also includes contacting the O₂ rich gas, steam,
and fuel with the partial oxidation catalyst and the steam reforming catalyst or the
combined partial oxidation and stream reforming catalyst in the inner reforming zone to
10 generate a hot reformat stream. The method still further includes cooling the hot
reformat stream in a cooling zone to produce a cooled reformat stream. Additionally,
the method includes removing sulfur-containing compounds from the cooled reformat
stream by contacting the cooled reformat stream with a sulfur removal agent. The
method still further includes contacting the cooled reformat stream with a catalyst that
15 converts water and carbon monoxide to carbon dioxide and H₂ in a water-gas-shift zone
to produce a final reformat stream in the fuel processor.